A STUDY OF

BLOOD LEAD CONCENTRATIONS IN CHILDREN

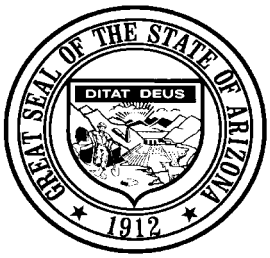
LIVING IN

CENTRAL PHOENIX

1998

Arizona Department of Health Services

June 1998



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SUMMARY

CENTRAL PHOENIX CHILDHOOD LEAD POISONING TARGETED SCREENING, 1998

INTRODUCTION

Lead poisoning is a reportable disease in Arizona. Test results lower than the reportable threshold of 10 ug/dL are not reported to the Lead Poisoning Surveillance Program. Therefore, surveillance data do not adequately characterize the prevalence of childhood lead poisoning in the state.

The project goal was to identify the prevalence rate of childhood lead poisoning in a high risk area of central Phoenix. The project obtained current, representative, community-based data on blood lead concentrations among 388 children 9 to 72 months of age. These children resided in three census tracts in two neighborhoods, Garfield and University Park (zip codes 85003, 85004, 85006, 85007). This age group has been shown to have the greatest risk of lead absorption. This area has many lead poisoning risk factors, including an older housing stock in which 75% of the homes is pre-1950, a minority population that is approximately 79% Hispanic, and a 70% poverty rate.

A 15% rate of lead poisoning was identified in 1994 for children in this same area who were screened by the state Medicaid program, AHCCCS, in 1994. This rate was one of the highest childhood lead poisoning rates in the state. The statewide AHCCCS rate was 3.8%.

The Douglas Lead Study identified a 2% rate of lead poisoning among young children in this Arizona community. This study was conducted in 1995 by ADHS. The Central Phoenix Targeted Screening Project used methodologies similar to the Douglas Lead Study.

METHODOLOGY

Health teams, consisting of an interviewer and phlebotomist, visited 2,102 homes between April 1 and June 15, 1998. The teams collected venous blood samples from 401 children, representing 5.5% of the total target population. Participating children were 9 to 72 months old and had lived in the neighborhood for at least one year. Health teams interviewed the families using a standard questionnaire and distributed educational materials in the appropriate language. All participation was on a voluntary basis. Neighborhood associations and the media were contacted to publicize the project and to ensure high participation. The participation rate was approximately 80% of eligible children contacted.

FINDINGS

Of the total children screened, 13 were excluded because of sampling inadequacies. For the remaining 388 children, the lead poisoning rate among children with elevated blood lead levels $\geq$ 10 ug/dL was 5.2%, and the average blood lead level was 4.4 ug/dL.

BLOOD LEAD LEVEL RESULTS

Blood Lead Classification*	Number	(%)
Class I (<10 ug/dL)	368	(94.8%)
Class IIA (10 ug/dL)	15	(3.9%)
Class IIB (15-19 ug/dL)	4	(1.0%)
Class III (20- 44 ug/dL)	1	(0.3%)
Class IV (45-69 ug/dL)	0	(0.0%)
Class VI (>69 ug/dL)	0	(0.0%)
Total ≥10 ug/dL	**388**	**(100.0%)**

Source: *Centers for Disease Prevention and Control

Data was sorted by age, race, ethnicity, and was analyzed separately for all cases. Overall, lead-poisoned children were younger on average (32 vs. 41 months), more likely to be male (60% vs. 52%), and more likely to be Hispanic (70%) than the rest of the population in the study.

NUMBER OF CHILDREN SCREENED BY AGE

Age	Number	(%)	Number with EBLL*	(%)
09 - 11 mos.	22	(5.7)	0	(0%)
12 - 23 mos.	73	(18.8)	7	(9.6%)
24 - 35 mos.	67	(17.3%)	7	(10.5%)
36 - 47 mos.	76	(19.6%)	2	(2.6%)
48 - 59 mos.	73	(18.8%)	3	(4.1%)
60 - 72 mos.	77	(19.8%)	1	(1.3%)
Total	**388**	**(100.0%)**	**20**	**(5.2%)**

* Elevated Blood Lead Level

The lead poisoning prevalence rate was highest in the one- and two-year-old children: 9.6% for children 12-23 months of age and 10.5% for children 24-35 months of age.

The families of lead-poisoned children received case management by this office, including prevention counseling, medical referrals, and environmental investigations. Sources of lead identified during environmental investigations included lead-based paint, and paint-contaminated soil and dust. Multiple sources of lead were found in some homes. Fourteen (70%) of the parents reported pica.

Upon investigation of each home, the following sources of lead exposure were identified:

SOURCES OF LEAD EXPOSURE

	Confirmed*		Possible**		Suspect***
Paint	16		2		
Soil	9	10			
Dust	10	7			
Imported Pottery					1
Folk Medicine				1	
Take Home Exposure			1		
Miniblinds	11		1		
Remodeling	1		1		
Hobby			2		

* Confirmed sources: laboratory samples that exceeded regulatory standards or guidelines for lead or strong evidence of lead present with a documentable route of exposure.
**Possible sources: laboratory samples that did not exceed regulatory standards or guidelines for lead, but were found to contain low levels of lead. Also includes sources with an unknown amount of lead content with a known route of exposure.
***Suspect sources: no direct evidence of lead. Source is usually not available for laboratory testing, but is suspicious for containing lead.

CONCLUSIONS AND RECOMMENDATIONS

Of the 388 children tested in central Phoenix, 5.2% were found to have elevated blood lead levels. One- and two-year-old children had rates of 9.6% and 10.5% respectively. These rates are higher than the 3.8% statewide average for AHCCCS and the 2% rate identified in the Douglas Lead Study. One- and two-year-old children are at greatest risk for lead poisoning because 1) they exhibit frequent hand-to-mouth behavior and inadvertently ingest lead, and 2) the blood-brain barrier is incompletely formed. In this study, the primary sources of lead exposure were soil, lead-based paint, and dust.

Children living in central Phoenix are at high risk for lead poisoning. Recommendations include increased screening and prevention activities. Risk factors present in central Phoenix occur in other areas of the state. Increased screening and prevention activities are also needed in these other high risk areas.

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